


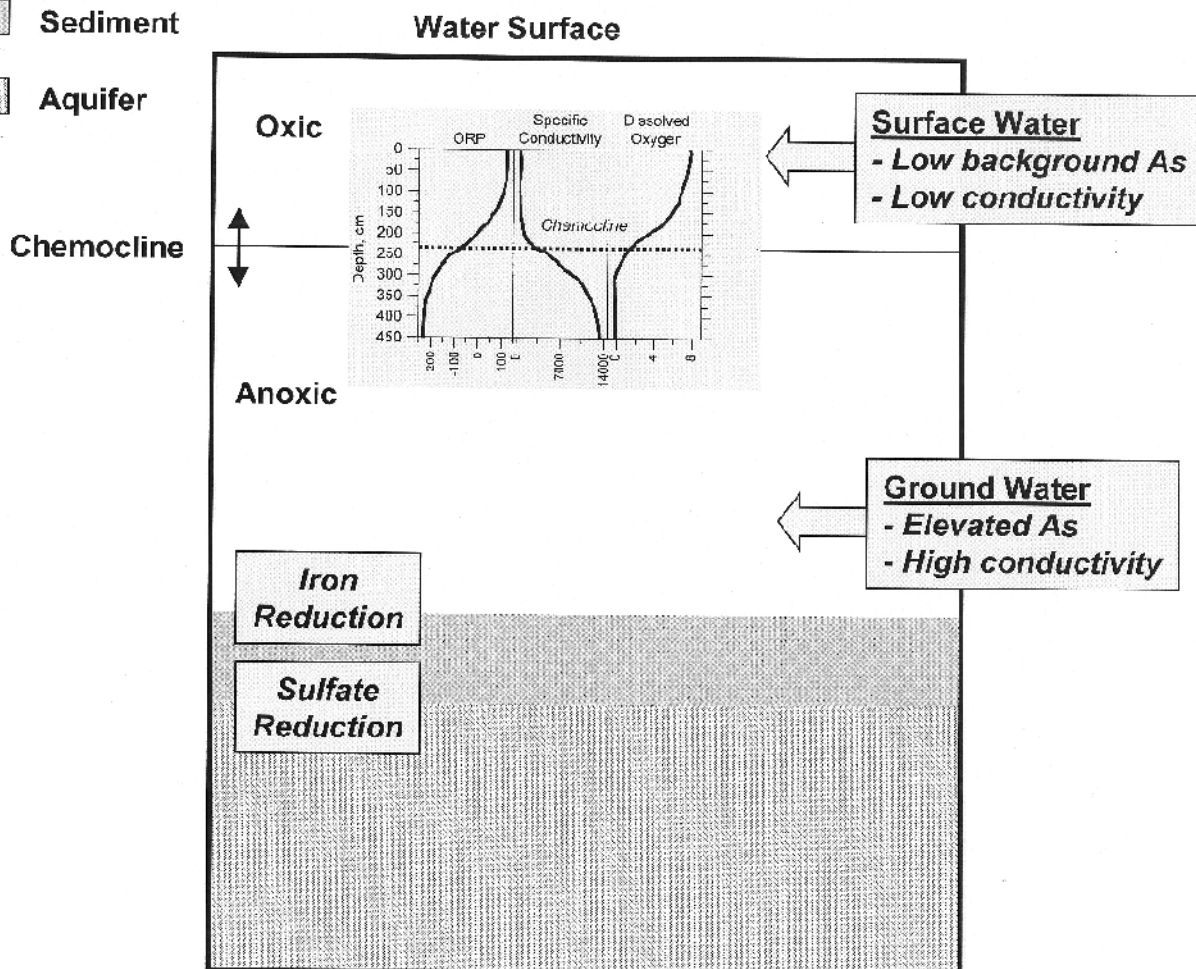


-  Water Column
-  Sediment
-  Aquifer



NOTES:

1. DEPICTION FROM NATURAL ATTENUATION STUDY, ROBERT FORD, EPA, 2004.
2. CONCEPTUAL DIAGRAM DEPICTING IMPORTANT HYDROLOGIC AND CHEMICAL PROCESSES CONTROLLING WATER COLUMN CHEMISTRY WITHIN THE SURFACE WATER BODY.
3. PREDOMINANT INPUTS OF WATER INTO THE SURFACE WATER BODY INCLUDE SITE-DERIVED GROUNDWATER AND HALLS BROOK.
4. IRON AND SULFATE REDUCTION PROCESSES ARE ACTIVE AT THE SEDIMENT-WATER INTERFACE AND WITHIN SHALLOW SEDIMENTS.
5. WATER CHEMISTRY PARAMETER UNITS: ORP, MV; SPECIFIC CONDUCTIVITY, MS/CM; DISSOLVED OXYGEN, MG/L.

CONCEPTUAL HYDROLOGIC & CHEMICAL PROCESSES CONTROLLING WATER CHEMISTRY

FIGURE 5 -1

MSGRP REMEDIAL INVESTIGATION REPORT
INDUSTRI-PLEX SITE, WOBURN, MASSACHUSETTS

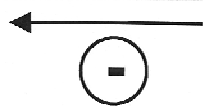


TETRA TECH NUS, INC.

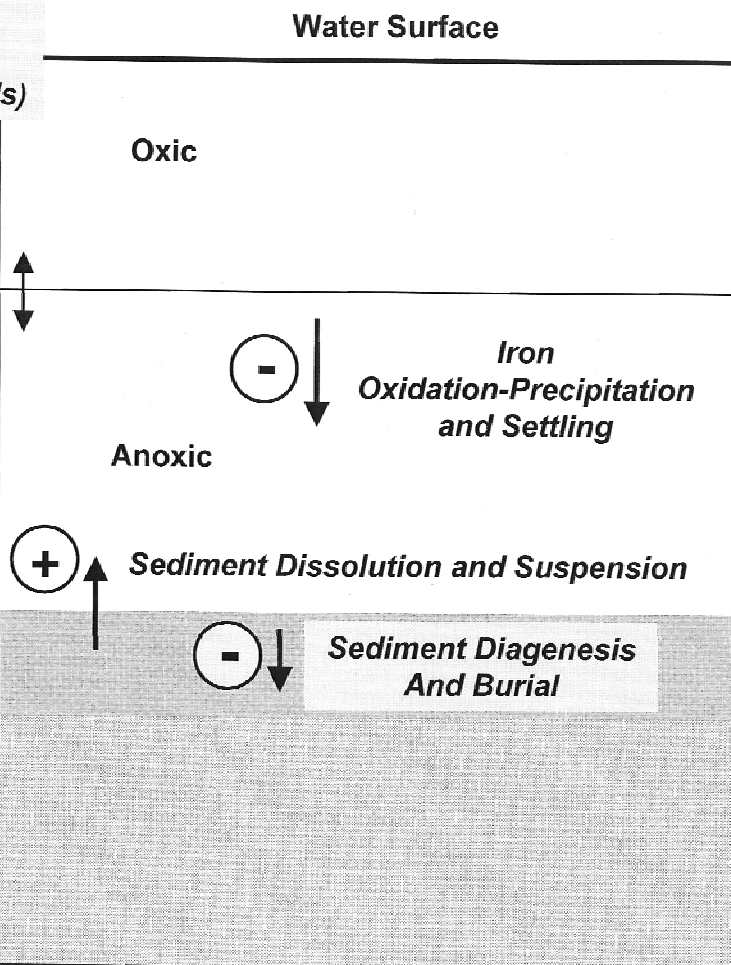
DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	G. BULLARD	DATE:	JAN. 14, 2005
SCALE:	NONE	ACAD NAME:	\\DWC\4123\0910\PROCESS_CONCEPT_WATER_CHEMISTRY.DWG

55 Jonspin Road Wilmington, MA 01887
(978)658-7899

**Surface Water
Discharge
(Dissolved &
Suspended Solids)**



Chemocline

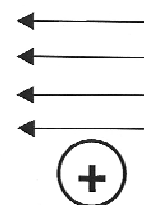


**Water
Column**

Sedimen

Aquifer

**Ground
Water
Discharge**



LEGEND



REPRESENTS INPUTS OF ARSENIC INTO THE WATER COLUMN INCLUDING DISCHARGE OF SITE-DERIVED GROUND WATER AND DISSOLUTION/RE-SUSPENSION OF CONTAMINATED SEDIMENTS



REPRESENTS REMOVAL OF ARSENIC FROM THE WATER COLUMN THAT OCCURS DURING IRON OXIDATION-PRECIPITATION AND SETTLING AT THE CHEMOCLINE AND PARTITIONING OF ARSENIC TO REDUCED SEDIMENTS DURING DIAGENESIS AND BURIAL

NOTES:

1. DEPICTION FROM NATURAL ATTENUATION STUDY, ROBERT FORD, EPA, 2004.
2. DIAGRAM REPRESENTS THE GENERAL PROCESSES CONTROLLING ARSENIC DISTRIBUTION BETWEEN SURFACE WATER AND SEDIMENTS WITHIN THE POND
3. PREDOMINANT INPUTS OF WATER INTO THE SURFACE WATER BODY INCLUDE SITE-DERIVED GROUNDWATER AND HALLS BROOK.

PROCESSES CONTROLLING ARSENIC IN SEDIMENTS & SURFACE WATER

FIGURE 5 -2

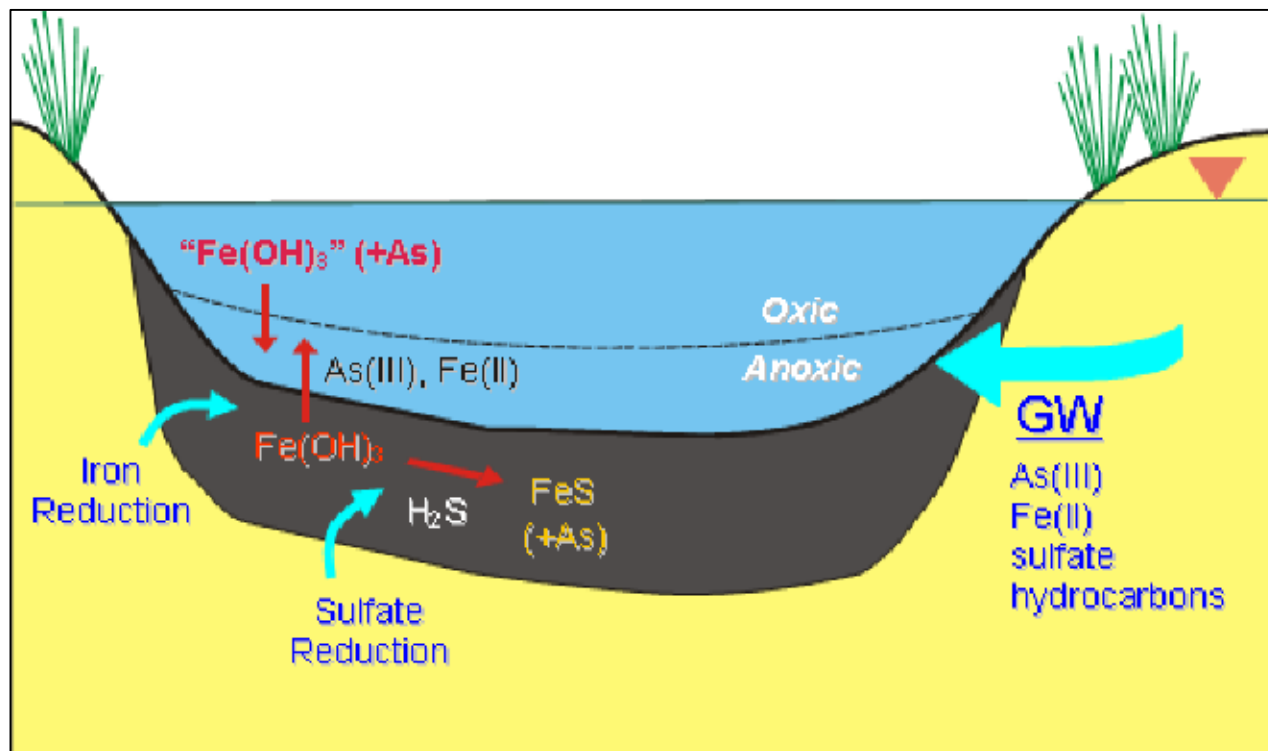
MSGRP REMEDIAL INVESTIGATION REPORT
INDUSTRI-PLEX SITE, WOBURN, MASSACHUSETTS



TETRA TECH NUS, INC.

DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	G. BULLARD	DATE:	JAN. 14, 2005
SCALE:	NONE	ACAD NAME:	\\DWG\4123\0910\PROCESS_CONTROL_ARSENIC.DWG

55 Jonspin Road Wilmington, MA 01887
(978)658-7899



NOTES:

1. DEPICTION FROM NATURAL ATTENUATION STUDY, ROBERT FORD, EPA, 2004.
2. REPRESENTS A GENERAL SCHEMATIC OF THE CHEMICAL REACTIONS CONTROLLING THE INTERNAL ARSENIC DISTRIBUTION BETWEEN THE AQUEOUS PHASE AND SOLID PHASE WITHIN THE HBHA POND.
3. ARSENIC BOUND TO AUTHIGENIC FERRIC OXIDES IS DESORBED DURING REDUCTIVE DISSOLUTION.
4. DISSOLVED ARSENIC IS SORBED TO FERRIC OXIDES PRECIPITATING AT THE CHEMOCLINE DUE TO FERROUS IRON OXIDATION.
5. ARSENIC IS REPARTITIONED TO FERROUS SULFIDES DURING REDUCTIVE DISSOLUTION OF AUTHIGENIC FERRIC OXIDES

CHEMICAL REACTIONS CONTROLLING ARSENIC IN BETWEEN AQUEOUS & SOLID PHASES

FIGURE 5-3

MSGRP REMEDIAL INVESTIGATION REPORT
INDUSTRI-PLEX SITE, WOBURN, MASSACHUSETTS



TETRA TECH NUS, INC.

DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	G. BULLARD	DATE:	JAN. 05, 2004
SCALE:	NONE	ACAD NAME:	\\DWG\4123\0910\CHEM_REACT_CONTROL_ARSENIC.DWG

55 Jonspin Road Wilmington, MA 01887
(978)658-7899